



Advanced Materials for Military Ground Platforms

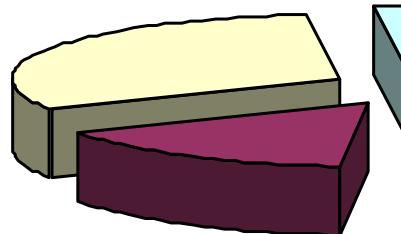


TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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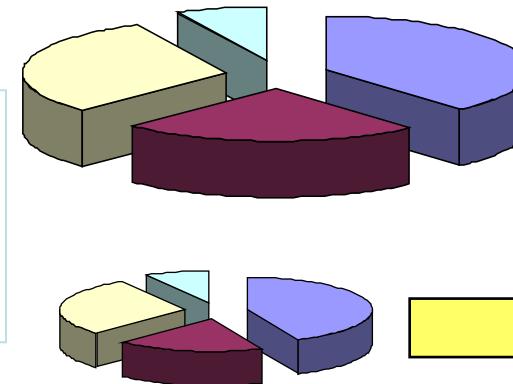
Part of the Materials Challenge



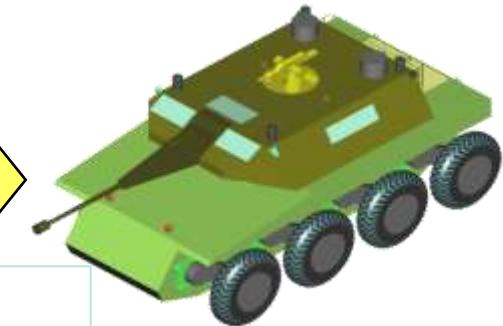
70 ton vehicle--
36 tons for structure & protection

- Structure & Protection
- Lethality
- Mobility
- Other

40 ton vehicle--
15.5 tons for structure & protection

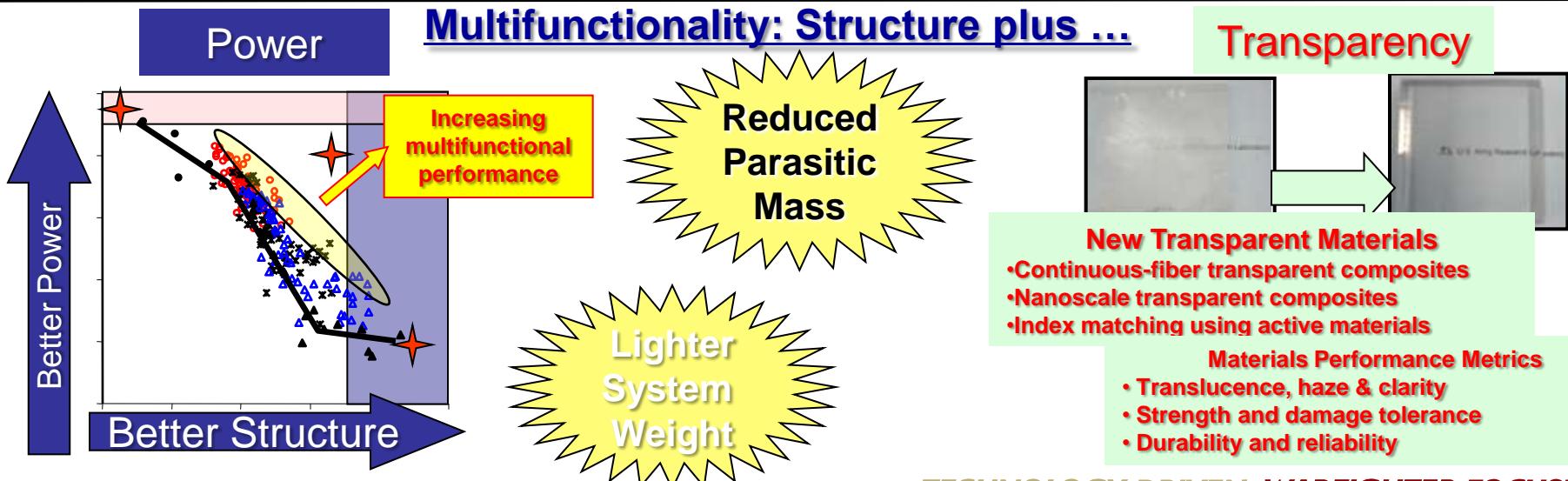
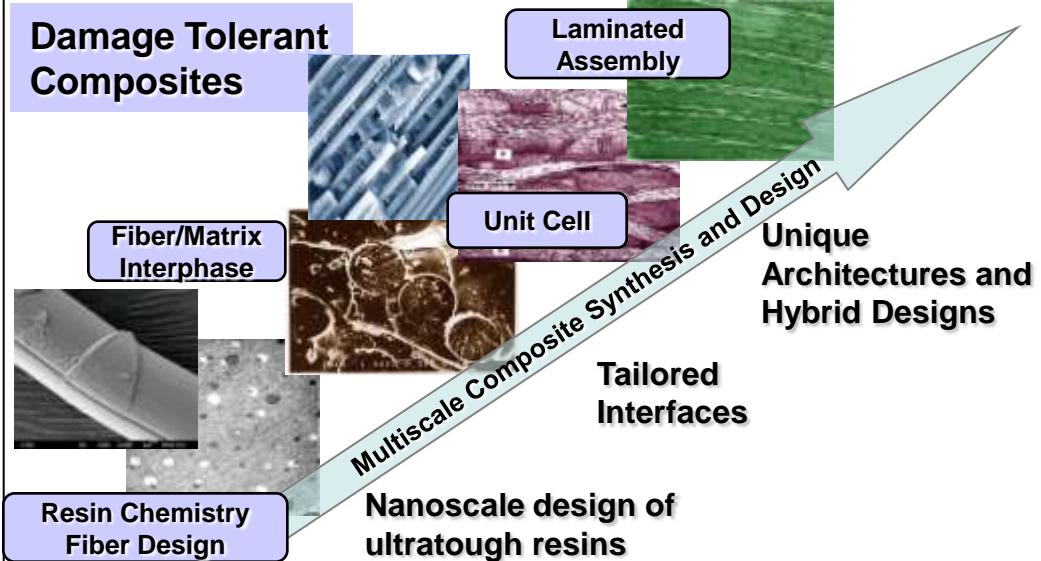
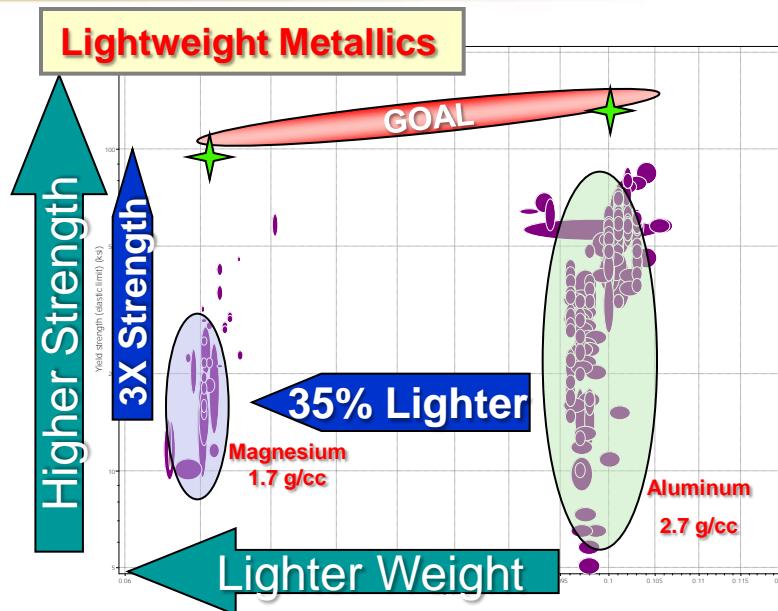


20 ton vehicle—
8.6 tons for structure & protection!



BUT ALSO NEED MORE POWER AND REDUCED THERMAL LOAD

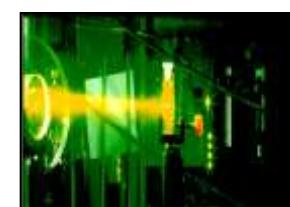
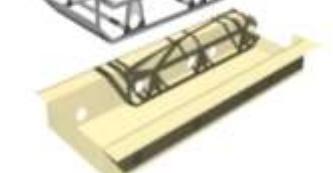
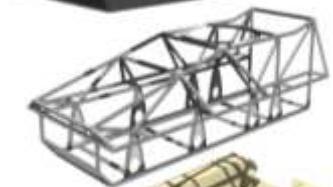
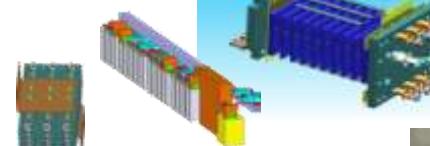
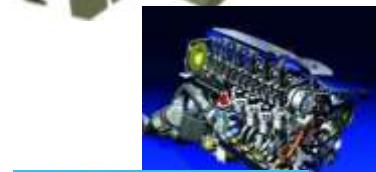
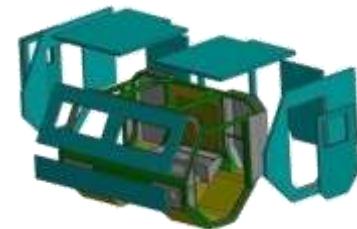
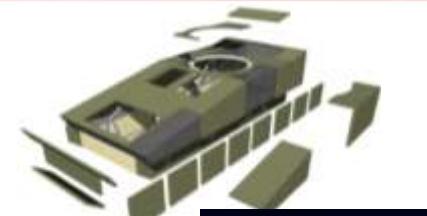
Complexity of Material Needs



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

UNCLASSIFIED

- advanced structural and propulsion systems
- power electronics and electric motors
- lightweight armor
- fire suppression
- optical limiters



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

- ultra high strength steels
- aluminum
- titanium
- magnesium
- Ni and Co superalloys (engine applications)
- PZTs
- metal matrix composites
- ceramic matrix composites
- polymer matrix composites
- ultralight engineered materials (e.g. foams, honeycomb, and sandwich materials)
- ultra high strength fibers
- resins and adhesives

- **Modeling of Composite Materials for Energy Absorption**
- **Nondestructive Evaluation Tools for Evaluation of Composite Structures**
- **Nondestructive Evaluation Techniques for On-Line Inspection of Structures**
- **Durability of Lightweight Composite Structures**
- **Composite Crash Energy Management**
- **Joining of Dissimilar Materials**
- **Adhesively-Bonded Composites**
- **Evaluation and Prediction of the Performance/Durability of Dissimilar Material Joints**